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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,737	08/13/2001	Son Ky Quan	SC09785T CD1	7252

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EXAMINER

NGO, HUNG V

ART UNIT PAPER NUMBER

2831

DATE MAILED: 09/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/928,737

Applicant(s)
Quan et al

Examiner
Hung V. Ngo

Art Unit
2831



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jun 27, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-22 is/are pending in the application.
- 4a) Of the above, claim(s) 14-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Tuttle et al (US 5,612,513).

Tuttle et al disclose a packaged semiconductor device comprising: providing an interconnect substrate (44) having a plurality of substantially identical package sites arranged in an array, the plurality of sites being separated by a singulation space (Fig 3); mounting and interconnecting a semiconductor device (die)(abstract) within each site; and overmolding a single and continuous encapsulant (60) over each semiconductor device, the plurality of sites, and the singulation space (Fig 4)(re claim 17).

Re claim 18, wherein overmolding produces a top surface of the encapsulant which has a surface deviation of less than 0.13 millimeters across a length of the encapsulant (Fig 4).

Re claim 19, wherein the plurality of package sites are arranged in an array of at least four by four package sites (Fig 4).

Re claim 20, further comprising the step of singulating the plurality of package sites after overmolding (col 6, lines 45-50).

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Re claim 21, wherein singulating comprises sawing through the single and continuous encapsulant and the interconnect substrate along the singulation space (col 6, lines 45-50).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle et al

The teaching of Tuttle et al as discussed above does not disclose the step of handling each packaged semiconductor device with automated pick and place equipment.

It is well known in the electrical art to use automated equipment for handling semiconductor device. It would have been obvious to one having ordinary skill in the art at the time the invention was made use automated equipment for handling the semiconductor device.

Response to Arguments

Applicant's arguments filed 06-27-2002 have been fully considered but they are not persuasive.

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Applicant argues (1) that Tuttle fails to disclose at least the recited step of “overmolding a single and continuous encapsulant. An overmolding process is a process in which a mold on one side of a substrate to define the final encapsulant shape and profile, (2) that Tuttle fails to disclose or suggest any specific dimension or dimensional relationship regarding the top surface of the encapsulant 60 other than that it has a substantially flat top surface, (3) that the examiner fail to provide an example of a materially different process that can be used. The examiner disagrees. With respect to (1), applicant’s specification recites “dam-bar 18 could be a premanufactured frame applied to area 12 and overmolding or other techniques could be used for the encapsulating” (page 6, lines 6-9). Tuttle et al disclose a dam 54 which is equivalent to a mold or a frame on one side of the substrate 44 to define the final encapsulant shape and profile. With respect to (2), Tuttle et al recite “preferably, sufficient encapsulant 60 is utilized to give each enclosed circuit 42 a substantially flat top surface” (col 6, lines 56-57). A flat top surface has a zero surface deviation. With respect to (3), the package can be made without singulating the plurality of package sites.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung V. Ngo whose telephone number is (703) 308-7614. The examiner can normally be reached on Tuesday to Friday from 8:30 am to 06:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard, can be reached on (703) 308-3682.

The fax phone number for this Group is (703) 305-3431 or (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Hung V. Ngo

August 28, 2002



HUNG V. NGO
PATENT EXAMINER